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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/667,097	09/21/2000	Kumi Jinzenji	10746/21	6354

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EXAMINER	
GOOD JOHNSON, MOTILEWA	
ART UNIT	PAPER NUMBER
2672	12

DATE MAILED: 02/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/667,097	JINZENJI ET AL.	
	Examiner	Art Unit	
	Motilewa A. Good-Johnson	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *17,19 and 21* is/are allowed.

6)☒ Claim(s) *1-16, 18, 20 and 22-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is responsive to the following communications: Application, filed on 09/21/2000; IDS, paper #2, filed on 09/21/2000; Request for reconsideration, filed 03/04/2003; Amendment A, filed 10/06/2003.

2. Claims 1-30 are pending in this application. Claims 1, 3, 5, 7, 9, 10, 12, 13, 15, 16, 18, 20, 22, 24, 25, 27, 28 and 30 are independent claims.

3. The present title of this application is "Method for separating background sprite and foreground object and method for extracting segmentation mask and the apparatus" (as originally filed).

Continued Examination Under 37 CFR 1.114

4. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/01/2003 has been entered.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

> e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Crinon et al., U.S. Patent Number 6,249,613, "Mosaic Generation and Sprite-Based Coding with Automatic Foreground and Background Separation", class 382/236.

As per independent claim 1, a foreground object and background sprite separation and extraction method for extracting . . . comprising the steps of: obtaining a global motion for transforming a coordinate system between a reference . . . ; mapping an original image corresponding to said frame into a reference coordinate system . . . ; generating a provisional sprite . . . ; cutting out a first image . . . using said global motion; obtaining a difference image between said first image and said original image; extracting a foreground object image . . . and extracting other region as a background image; mapping said background image . . . Crinon discloses segmenting foreground and background objects, coding in global motion parameters, col. 2, lines 37-55. Crinon further discloses reconstructing a sprite for isolating the object having the most motion in the video sequence, col. 3, lines 23-35.

With respect to dependent claim 2, cutting out a second image from said background sprite . .. ; obtaining a difference image . . . ; extracting a foreground object image as a region in said difference . . . Crinon discloses in figure 8.

As per independent claims 3 and 5, they are rejected based upon similar rational as above independent claim 1 respectively.

With respect to dependent claims 4 and 6, they are rejected based upon similar rational as above dependent claim 2.

As per independent claim 7, a segmentation mask extraction method . . . comprising the steps of: receiving a foreground mask image . . . ; providing a first value as an alpha value . . . in each of the first macro-blocks . . . ; providing said first value as said alpha value to all shape pixels in each of second macro-blocks . . . ; and outputting said segmentation mask. Crinon discloses first and second macro-blocks tagged as foreground and background objects, figure 9, col. 9, lines 42-67 and in col. 10, lines 1-30.

With respect to dependent claim 8, receiving each of third macro-blocks . . . as said background part; and providing said first value to said third macro-block . . . Crinon discloses a binary segmentation map and further using a neighborhood of macro-blocks around a macro-block of interest, col. 9, lines 20-28.

As per independent claim 9, a segmentation mask extraction . . . comprising the steps of: receiving a foreground mask image; generating a number map . . . ; initializing a foreground map; providing a predetermined value to each of positions in said foreground map . . . ; providing said predetermined value to each of position in said foreground map . . . ; and generating said segmentation mask . . . Crinon discloses generating macro-blocks having multiple local motion type vectors and further having

macro-blocks as foreground only, background only, and foreground or background, col. 2, lines 37-67.

As per independent claims 10 and 13, they are rejected based upon similar rational as above independent claim 7.

With respect to dependent claims 11 and 14, they are rejected based upon similar rational as above dependent claim 8.

As per independent claim 12 and 15, they are rejected based upon similar rational as above independent claim 9, respectively.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 16, 18, 20, 22-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang, U.S. Patent Number 6,256,409, "Method for Determining a Correlation between Images using Multi-Element Image Descriptors", class 382/170.

As per independent claim 16, a segmentation mask extraction method . . . comprising the steps of: obtaining said difference image by calculating an absolute difference . . . initializing an energy map for each macro-block of said difference image;

calculating energy values for said each macro-block; obtaining an average of said energy values; calculating a foreground ratio . . . ; and generating said segmentation mask . . . Wang discloses an energy map, feature vector or image descriptor to describe multi-band images or the correlation between a first image and a second image, col. 5, lines 12-59. However, it is noted that Wang fails to disclose representing an energy map as a macro-block for each different image. It would have been obvious to one of ordinary skill in the art at the time of the invention to include macro-blocks as image descriptors in the invention of Wang to further describe the correlation of the first and second images for performing image matching.

As per independent claims 18 and 20, they are rejected based upon similar rational as above independent claim 16.

As per independent claim 22, a segmentation mask extraction method for extracting a segmentation mask . . . comprising: a first step of regarding each of first macro-blocks as the foreground when an energy value of said first macro-block which is obtained . . . ; a second step of regarding each of second macro-blocks as the foreground . . . Wang discloses an energy map, feature vector or image descriptor to describe multi-band images or the correlation of a first image and a second image. However, it is noted that Wang fails to disclose representing an energy map as a macro-block for each different image. It would have been obvious to one of ordinary skill in the art at the time of the invention to include macro-blocks as the image descriptors disclosed in Wang to further describe the correlation of the first and second images for performing image matching.

With respect to dependent claim 23, iterating said second step for predetermined times. Wang further discloses re-processing and re-examining the image descriptors, col. 21, lines 4-17.

As per independent claim 24, Wang further discloses comparing the image descriptors and categorizing the different image descriptors and belonging to a different image category type, col. 17, lines 32-67. However, it is noted that Wang fails to disclose representing an energy map as a macro-block for each different image. It would have been obvious to one of ordinary skill in the art at the time of the invention to include macro-blocks as the image descriptors disclosed in Wang to describe the correlation of the first and second images for performing image matching.

As per independent claims 25 and 28, they are rejected based upon similar rational as above independent claim 22.

With respect to dependent claims 26 and 29, they are rejected based upon similar rational as above dependent claim 23.

As per independent claims 27 and 30, they are rejected based upon similar rational as above independent claim 24 respectively.

Allowable Subject Matter

9. Claims 17, 19 and 21 are allowed.

10. The following is a statement of reasons for the indication of allowable subject matter: The prior art cited in its entirety fail to render obvious dividing an energy value

by an average to obtain the macro-blocks to represent the energy values in the foreground and background maps.

Response to Arguments

11. Applicant's arguments filed 03/04/2003 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., generating a provisional sprite one and using a provisional sprite to provide a clear sprite) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant argues that Crinon fails to disclose the use of a provisional sprite. Crinon discloses the use of multiple sprites, col. 2, lines 37-55, to create a background sprite. Deleting foreground objects generates applicant's provisional sprite as claimed. Crinon discloses segmenting foreground and background objects. Applicant argues that Crinon fails to disclose separating the foreground and background image using the provisional sprite and discloses only automatic segmentation does not require any additional frame storage and works. The text recites that multiple sprites are used as needed and can include the use of two background sprites, col. 2, lines 37-40. Furthermore it is inherent that if the sprite is constructed for only one object in the image and the sprite becomes more useable since it is related to the one object that the

background image may be composed of multiple objects and therefore would require multiple sprites.

Applicant argues that Crinon fails to disclose cutting out a second image form the background sprite by using global motion, obtaining a difference image . . . and extracting a foreground object image as a region in the difference image . . . higher than a threshold. Applicant states that in figure 8, Crinon indicates how the encoder distinguishes background from foreground, which Examiner interprets as obtaining a difference between images. Applicant further states that Crinon discloses global motion estimation residual are compared and if the global residual is greater than tagging the image as a foreground, which Examiner interprets as extracting a foreground object image where the difference value in the region is equal or higher than a threshold.

Applicant argues that Crinon fails to disclose first and second macro-blocks tagged as and foreground and background objects and extracting a segmentation mask and a two-stage macro-block approximation. Crinon indicates how the encoder distinguishes background from foreground, which Examiner interprets as obtaining a difference between images. Applicant states that Crinon refers to a process segmentation map, making regions homogeneous and updating the mosaic according to a new segmentation map, which Examiner interprets as multi process segmentation procedure.

Applicant argues that Crinon fails to disclose providing a value to a position in the foreground correspond to first macro blocks . . . value to each of the positions in the foreground map corresponding to second macro-blocks when the value of the number

map correspond to the second macro-block is equal to or larger than a second predetermined value. Applicant states that Crinon refers to generating macro-blocks having multiple local motion type vectors and macro-blocks as foreground only, which Examiner interprets as a macro-block equal to a first predetermined value, and foreground or background, which Examiner interprets as a macro-block equal to a second predetermined value.

Applicant argues that Wang fails to disclose generating of a segmentation mask using foreground ratio. Wang discloses determining a correlation between images, col. 2, lines 10-13, the use of an energy matrix referred to as an orientation map, calculating the dominant orientation at each pixel, and combining the descriptors to form an image descriptor, col. 5, lines 12-23. Therefore making it obvious to use the image descriptors disclosed in Wang with the mosaic images built from images of a scene and image segmentation, which is a correlation between images, as disclosed in Crinon. Applicant further argues that Wang does not describe first and second macro-block approximations. Crinon discloses sub-classification of the regions tagged as 1, the foreground region, into 1a and 1b, for macro block coding, col. 6, lines 26-37. Crinon further discloses the tagged regions are coded for different image support. Wang discloses determining a correlation between images using an energy map. It is obvious that if Crinon allows for the sub-classification of the macro-blocks in the foreground region, the invention of Wang would allow for the coding of the sub-classification of the macro-blocks using energy map descriptors.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Motilewa A. Good-Johnson whose telephone number is (703) 305-3939. The examiner can normally be reached on Monday - Friday 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Razavi can be reached on (703) 305-4713. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

Motilewa A. Good-Johnson
Examiner
Art Unit 2672

mgj
February 20, 2004